

# **DRAGEN v3.4.12**

## **Software Release Notes**

## Introduction

These release notes detail the key changes to software components for the Illumina® DRAGEN™ Bio-IT Platform v3.4.12 since the major release containing DRAGEN™ v3.4.5

If you are upgrading from a version prior to DRAGEN™ v3.4.5, please review the release notes for DRAGEN™ v3.4.5 for a list of features and bug fixes introduced in that version.

DRAGEN™ v3.4.x Installers and Release Notes are available here:

<https://support.illumina.com/downloads/illumina-dragen-v3-4-installers.html>

The 3.4.12 software package includes:

- DRAGEN™ SW Intel Centos 6 - dragen-3.4.12.el6.x86\_64
- DRAGEN™ SW Intel Centos 7 - dragen-3.4.12.el7.x86\_64
- DRAGEN™ SW IBM PPC Centos 7 - dragen-3.4.12.el7.ppc64le.run

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## Highlights

### DRAGEN™ v3.4.12

The v3.4.12 patch release contains the following changes:

- Improvements
  - VC: Added support to generate both VCF and gVCF in the same analysis run
    - VCF and gVCF now produce the same calls
    - New option `--vc-enable-vcf-output` can be used to enable VCF output in a gVCF run
  - VC: Improved FRD/BQD algorithm
    - Improved accuracy in gVCF mode, and helps in generating the same calls in VCF and gVCF
  - Metrics: Include mapq=0 reads in coverage reports counting, when mapq<0 filter is used
- Bug fixes
  - Alignment output
    - Fix for a bug in the generation of NM tags in the alignment output
  - Joint Caller
    - Denovo post-filter vc metrics were not updated correctly. This issue was introduced in v3.4.5 and fixed here.
    - Do not update GT based on pedigree for indels
    - Sex chromosome GT fields were incorrectly updated based on pedigree, in cases where the sample ploidy is not known.
    - A crash in Joint Caller when input FORMAT/DP field is not valid
  - Duplicate marking
    - Add duplicate marking to unmapped reads. DRAGEN previously never marked unmapped reads as duplicates
    - Non-properly paired reads now mark the expected pair as a duplicate. Mark unmapped mates of duplicates as duplicates, for half-mapped pairs.
  - Fix for a rare crash in SV metric reporting
  - AWS: Fix for an issue where the FPGA DRAM gets corrupted after several hundred back-to-back analysis runs on a single F1 instance, leading to invalid output and/or crashes.

### DRAGEN™ v3.4.9

The v3.4.9 patch release addresses the following issues present in v3.4.5:

- Stability improvements
  - Fix for a rare intermittent hang during mapping, seen on Dell R740 servers only. This was due to a corruption in the FPGA DRAM that may happen during HW reset.
  - Fix for a rare intermittent crash during partial reconfiguration of the FPGA, seen on Dell R4740 servers only. This was due to a race condition when `dragen_lic` concurrently access the card while the FPGA is reconfigured.
  - Fix for a rare intermittent hang during RNA mapping.
  - Fix for a rare intermittent crash in germline mode with CRAM output.
  - Fix for an intermittent run-to-run variation on the Joint Caller output on chrX.
- Bug fixes
  - Fix for a bug in Joint Calling for pedigrees containing multiple trios: The positions of the sibling were GT corrected even though the individual GT did not show a mendelian conflict.
  - Fix for a bug in Joint Calling for pedigrees with trios: GT was updated even when the denovo quality score (DQ) is below the filter threshold.

- Fix for crashing when enabling CRAM output for Somatic T/N runs.
- Fix for failing to auto detect the stranded (ISR) library-type in RNA quantification.
- Fix for crashing during BCL conversion of 384-plex, 8 lane, unique-duals inputs.
- Fix for a missed deletion on the mitochondrial contig in the structural variant caller.
- Fix to the calculation of GC bias, by skipping decoy and alt contigs.

## SW Installation Procedure

- Install the appropriate release based on your Linux OS with the command: `sudo sh <dragen 3.4.12 .run file>`
- Cold boot (hard reset or power cycle) may be required after installation. An updated FPGA image base needs to load from flash, this is only achieved with cold boot.
  - Cold boot is required when upgrading from a release prior or up to v3.3.7
  - Cold boot is **not** required when upgrading from a release after v 3.3.7
  - Cold boot is **not** required when upgrading from v3.4.5 or v3.4.9
- Installation of prior releases, after v3.4.x was installed:
  - Installation of a prior release v3.3.7 or older, will require the following three steps. The prior .mcs file needs to be flashed manually:
    - Install the prior release: `sudo sh <dragen 3.3.7 .run file>`
    - `program_flash /opt/edico/bitstream/07*/*.mcs`
    - Power cycle
  - Installation of prior release v3.4.5 or v3.4.9, or any prior version after v3.3.7:
    - Run: `sudo sh <dragen 3.x.x .run file>`

md5checksum:

```
fb453c72ff992bba6c47f7cb35d641e4 dragen-3.4.12.e17.x86_64.run
639e8af047dc28603668faedf3857c5f dragen-3.4.12.e16.x86_64.run
1789b0ac4a988d85813e69c4f77d2561 dragen-3.4.12.e17.ppc64le.run
```